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February 22, 2005

WRITER'S DIRECT NUMBER: (202) 772-8587
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Mail Stop Amendment

Commissioner for Patents PO Box 1450 Alexandria, VA 22313-1450

Re:

U.S. Utility Patent Application

Application No. 09/844,283; Filed: April 30, 2001

or: Methods and Systems for Adaptive Receiver Equalization

Inventor:

BUCHWALD et al.

Our Ref:

1875.0560003

Sir:

Transmitted herewith for appropriate action are the following documents:

- 1. Credit Card Payment Form (PTO-2038);
- 2. Fee Transmittal Form (PTO/SB/17);
- 3. Second Supplemental Information Disclosure Statement;
- 4. Ten (10) sheets of Form PTO-1449 listing ninety-two (92) documents;
- 5. Copies of sixty-seven (67) documents; and
- 6. One (1) return postcard.

It is respectfully requested that the attached postcard be stamped with the date of filing of these documents, and that it be returned to our courier. In the event that extensions of time are necessary to prevent abandonment of this patent application, then such extensions of time are hereby petitioned.

Commissioner for Patents February 22, 2005 Page 2

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Patrick E. Garrett Attorney for Applicant Registration No. 39,987

PEG/mlb Enclosures

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Equivalent to Form PTO/SB/17 (12-04)

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persons are required to respond to a collection of information unless it displays a valid OMB control number Under the Paperwork Reduction Act of 1995 Effection Part 2004. Complete if Known Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818). Application Number 09/844,283 **FEE TRANSMITTAL** Filing Date April 30, 2001 For FY 2005 First Named Inventor BUCHWALD et al. Examiner Name Zheng, Eva Y. Applicant claims small entity status. See 37 CFR 1.27 Art Unit 2634

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SUBMITTED BY	A A				
Signature	tax s / anext	Registration No. (Attorney/Agent)	39,987	Telephone	(202) 371-2600
Name (Print/Type	Patrick E. Garrett			Date a/	03/05

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.



Confirmation No.: 1013

Art Unit: 2634

Examiner: Zheng, Eva Y.

Atty. Docket: 1875.0560003

Filed: April 30, 2001

Appl. No.: 09/844,283

In re application of:

BUCHWALD et al.

For: Methods and Systems for

Adaptive Receiver Equalization

Second Supplemental Information Disclosure Statement

Commissioner for Patents PO Box 1450 Alexandria, VA 22313-1450

Sir:

Listed on accompanying Form PTO-1449 are documents that may be considered material to the examination of this application, in compliance with the duty of disclosure requirements of 37 C.F.R. §§ 1.56, 1.97 and 1.98.

Where the publication date of a listed document does not provide a month of publication, the year of publication of the listed document is sufficiently earlier than the effective U.S. filing date and any foreign priority date so that the month of publication is not in issue. Applicants have listed publication dates on the attached PTO-1449 based on information presently available to the undersigned. However, the listed publication dates should not be construed as an admission that the information was actually published on the date indicated.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered.

This statement should not be construed as a representation that a search has been made, or that information more material to the examination of the present patent application does not exist. The Examiner is specifically requested not to rely solely on the material submitted herewith.

Applicants have checked the appropriate boxes below.

- ☐ 1. Statement under 37 C.F.R. 1.704(d). Each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart application and this communication was not received by any individual designated in 37 C.F.R. § 1.56(c) more than thirty days prior to the filing of this information disclosure statement.
- 2. Filing under 37 C.F.R. § 1.97(b). This Information Disclosure Statement is being filed before the mailing date of a first Office Action on the merits. No statement or fee is required.
- - a. Statement under 37 C.F.R. § 1.97(e)(1). I hereby state that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than

three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1).

- b. Statement under 37 C.F.R. § 1.97(e)(2). I hereby state that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2).
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 \infty\] c. Attached is our PTO-2038 Credit Card Payment Form in the amount of \$180.00 in payment of the fee under 37 C.F.R. §

 1.17(p).
- 4. Filing under 37 C.F.R. § 1.97(d) This Information Disclosure Statement is being filed more than three months after the U.S. filing date and after the mailing date of a Final Rejection or Notice of Allowance, but before payment of the Issue Fee. Enclosed find our PTO-2038 Credit Card Payment Form in the amount of \$______ in payment of the fee under 37 C.F.R. § 1.17(p); in addition:
 - item of information contained in this Information Disclosure

 Statement was first cited in any communication from a foreign

 patent office in a counterpart foreign application not more than

three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1).

- b. Statement under 37 C.F.R. § 1.97(e)(2). I hereby state that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2).
- 5. The document(s) was/were cited in a search report by a foreign patent office in a counterpart foreign application. Submission of an English language version of the search report that indicates the degree of relevance found by the foreign office is provided in satisfaction of the requirement for a concise explanation of relevance. 1138 OG 37, 38.
- 6. A concise explanation of the relevance of the non-English language document(s) appears below in accordance with 37 C.F.R. § 1.98(a)(3).
- Zopies of the documents listed in the sections entitled 'Foreign Patent Documents' and 'Other Documents' are enclosed. However, in accordance with 37 C.F.R.

 § 1.98(a)(2), copies of the U.S. patents and patent application publications cited on the attached Form PTO-1449 are not enclosed.
- 8. Copies of the documents were cited by or submitted to the Office in an IDS that complies with 37 C.F.R. § 1.98(a)-(c) in Application No.

BUCHWALD *et al.* Appl. No. 09/844,283

- 5 -

filed ______, which is relied upon for an earlier filing date under 35 U.S.C. § 120. Thus, copies of these documents are not attached. 37 C.F.R. § 1.98(d).

9. It is expected that the examiner will review the prosecution and cited art in the parent application no(s). _____ in accordance with MPEP 2001.06(b), and indicate in the next communication from the office that the art cited in the earlier prosecution history has been reviewed in connection with the present application.

It is respectfully requested that the Examiner initial and return a copy of the enclosed Form PTO-1449, and indicate in the official file wrapper of this patent application that the documents have been considered.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Patrick E. Garrett Attorney for Applicants Registration No. 39,987

Date: 22205

1100 New York Avenue, N.W. Washington, D.C. 20005-3934 (202) 371-2600

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FORM PTO-1449 SECOND SUPPLEMENTAL INFORMATION DISCLOSURE STATEMEN

Page 1 of 10 ATTY. DOCKET NO. APPLICATION NO. 1875.0560003 09/844,283 **INVENTORS** BUCHWALD et al.

INFO	DRMATIO	N DISCLOSURE STATE	MARIN	FILING DATE ART UNIT April 30, 2001 2634				
			U.S. PAT		OCUMENTS	2004		
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAM	1E	CLASS	SUB-CLASS	FILING DATE
	AA1	5,396,224	03/1995		es et al.			
	AB1	5,550,546	08/1996	Non	eman <i>et al</i> .			
	AC1	5,554,945	09/1996	Lee	Lee et al.			
	AD1	5,614,855	03/1997	Lee	et al.			
	AE1	5,703,905	12/1997	Lan	gberg			
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INITIAL	AF1	EP 1 006 697	06/2000		EP	CLASS	SUB-CLASS	N/A
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	AJ1	Conroy, C. et al., "An Solid-State Circuits, I					n CMOS," <i>IE</i>	EEE Journal of
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Page 2 of 10 APPLICATION NO. ATTY. DOCKET NO. **FORM PTO-1449** 1875.0560003 09/844,283 INVENTORS SECOND SUPPLEMENTAL BUCHWALD et al. INFORMATION DISCLOSURE STA ART UNIT FILING DATE April 30, 2001 2634 **U.S. PATENT DOCUMENTS** EXAMINER SUB-CLASS | FILING DATE DOCUMENT NUMBER NAME CLASS INITIAL DATE AA2 5,768,268 06/1998 Kline et al. AB2 5,822,143 10/1998 Cloke et al. 03/1999 Termerinac et al. 5,881,107 AC2 AD2 5.945.862 08/1999 Donnelly et al. 12/1999 Katakura AE2 6,005,445 **FOREIGN PATENT DOCUMENTS** EXAMINER CLASS SUB-CLASS **TRANSLATION** COUNTRY INITIAL DOCUMENT NUMBER DATE N/A 07/2001 WO WO 01/54317 AF2 wo N/A 09/2001 AG2 WO 01/65788 N/A 11/2001 WO AH2 WO 01/84702 OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.) Fu, D. et al., "A Digital Background Calibration Technique for Time-Interleaved Analog-to-Digital Converters," IEEE Journal of Solid-State Circuits, IEEE, Vol. 33, No. 12, December 1998, pages AI2 1904-1911. Guizani, M. and Al-Ali, A., "PC-Compatible Optical Data Acquisition Unit," Instrumentation and AJ2 Measurement Technology Conference, IEEE, May 10-12, 1994, pages 1099-1102. Jeng, Y.-C., "Digital Spectra of Nonuniformly Sampled Signals: A Robust Sampling Time Offset Estimation Algorithm for Ultra High-Speed Waveform Digitizers Using Interleaving" Transactions on AK2 Instrumentation and Measurement, IEEE, Vol. 39, No. 1, February 1990, pp. 71-75. Mason, R. and Taylor, J.T., "High-Speed Electro-Optic Analogue to Digital Converters," IEEE AL2 International Symposium on Circuits and Systems, IEEE, 1993, pages 1081-1084. Niewczas, P. et al., "Error Analysis of an Optical Current Transducer Operating with a Digital Signal Processing System," IEEE Transactions on Instrumentation and Measurement, IEEE. Vol. 49, No. AM2 6, December 2000, pages 1254-1259. Petraglia, A. and Mitra, S., "Analysis of Mismatch Effects Among A/D Converters in a Time-Interleaved Waveform Digitizer," IEEE Transactions on Instrumentation and Measurement, IEEE, AN2 Vol. 40, No. 5, October 1991, pages 831-835. DATE CONSIDERED **EXAMINER EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance

FORM PTO-1449

SECOND SUPPLEMENTA

ALTION DISCLOSURE STATEMENT

Page 3 of 10

ATTY. DOCKET NO. APPLICATION NO. 09/844,283

INVENTORS
BUCHWALD et al.

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INFORMATION DISCLOSURE STA 2634 April 30, 2001 U.S. PATENT DOCUMENTS **EXAMINER** CLASS SUB-CLASS FILING DATE INITIAL DOCUMENT NUMBER DATE NAME 6,009,534 12/1999 Chiu et al. AA3 6.038.269 03/2000 Raghavan AB3 6,134,268 10/2000 McCoy AC3 AD3 6,329,859 B1 12/2001 Wu 03/2002 Chen AE3 6,359,486 B1 **FOREIGN PATENT DOCUMENTS** EXAMINER CLASS SUB-CLASS **TRANSLATION** DATE COUNTRY DOCUMENT NUMBER INITIAL N/A WO WO 01/84724 11/2001 AF3 wo N/A 02/2002 AG3 WO 02/13424 N/A wo 09/2002 AH3 WO 02/071616 OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.) Sauer-Greff, W. et al., Maximum-Likelihood Sequence Estimation of Nonlinear Channels in High-Speed Optical Fiber Systems, April 6, 2001, Retrieved from the Internet at AI3 http://www.ftw.at/Dokumente/010406a.pdf, 29 pages. Williamson, R.C. et al., "Effects of Crosstalk in Demulitplexers for Photonic Analog-to-Digital Converters," Journal of Lightwave Technology, IEEE, Vol. 19, No. 2, February 2001, pages 230-AJ3 236. Yang, C-K., Design Techniques for High-Speed Chip-to-Chip Links, Retrieved from the Internet at AK3 http://web.doe.carleton.ca/courses/97578/topic5/Tutorial_SerialLink.pdf, 31 pages. Yang, C-K. et al., "A Serial-Link Transceiver Based on 8-Gsamples/s A/D and D/A Converters in 0.25-µm CMOS," IEEE Journal of Solid-State Circuits, IEEE, Vol. 36, No. 11, November 2001, AL3 pages 1684-1692. Zuoxi, T., "Implementation of a Digital Multibeam Receiver Based on TMS320C80 for Laser AM3 Optoacoustic Remote Sensing," Proceedings of ICSP2000, IEEE, 2000, pages 2082-2084. Agazzi, O. and Lenosky, T., Algorithm to Postprocess Measured Data, IEEE 802.3ae Equalization AN3 Ad Hoc Group, January 10, 2001, 11 pages.

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

EXAMINER

Page 4 of 10 APPLICATION NO. ATTY. DOCKET NO. 09/844,283 **FORM PTO-1449** 1875.0560003 **INVENTORS** SECOND SUPPLEMENTAL BUCHWALD et al. INFORMATION DISCLOSURE STATE **ART UNIT FILING DATE** April 30, 2001 2634 **U.S. PATENT DOCUMENTS EXAMINER** CLASS SUB-CLASS FILING DATE DOCUMENT NUMBER DATE INITIAL NAME AA4 6,397,048 B1 05/2002 Toda AB4 6,498,694 B1 12/2002 Shah 01/2003 Buchwald et al. 6,509,773 B2 AC4 AD4 6,791,388 B2 09/2004 Buchwald et al. 01/2002 Agazzi et al. AE4 2002/0012152 A1 **FOREIGN PATENT DOCUMENTS** EXAMINER COUNTRY CLASS SUB-CLASS TRANSLATION DATE INITIAL DOCUMENT NUMBER Yes AF4 No Yes AG4 No Yes AH4 No OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.) Agazzi, O., A Link Model for Equalized Optical Receivers, IEEE 802.3ae Equalization Ad Hoc Al4 Group, March 11, 2001, 30 pages. Agazzi, O. et al., DSP-Based Equalization for Optical Channels: Feasibility of a VLSI AJ4 Implementation, IEEE 802.3ae, New Orleans, September 12-14, 2000, 39 pages. Agazzi, O. et al., Interim Observations on Multimode Optical Channels, IEEE 802.3ae -AK4 Equalization Ad Hoc, Tampa, November 5, 2000, 29 pages. Agazzi, O. et al., Measurements of DMD-Challenged Fibers at 3.125Gb/s, IEEE 802.3ae AL4 Equalization Ad Hoc, January 10, 2001, 33 pages. Agazzi, O. and Lenosky, T., "Measurement of Non-Stationarity of 10 Gb/s Multimode Fiber Links," AM4 November 24, 2000, 5 pages. Agazzi, O., 10 Gb/s PMD Using PAM-5 Modulation, IEEE 802.3, Dallas, January 18-20, 2000, 19 AN4 pages. DATE CONSIDERED **EXAMINER**

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Page 5 of 10 ATTY. DOCKET NO. APPLICATION NO. **FORM PTO-1449** 1875.0560003 09/844,283 **INVENTORS** SECOND SUPPLEMENTAL BUCHWALD et al. INFORMATION DISCLOSURE STATE **FILING DATE ART UNIT** 2634 April 30, 2001 **U.S. PATENT DOCUMENTS** EXAMINER INITIAL DOCUMENT NUMBER DATE NAME CLASS SUB-CLASS **FILING DATE** 04/2002 Buchwald et al. AA5 2002/0039395 A1 2002/0044617 A1 Buchwald et al. AB5 04/2002 04/2002 Buchwald et al. 2002/0044618 A1 AC5 AD5 2002/0080898 A1 06/2002 Agazzi et al. AE5 2004/0212416 A1 10/2004 Buchwald et al. **FOREIGN PATENT DOCUMENTS** EXAMINER CLASS SUB-CLASS **TRANSLATION** INITIAL DOCUMENT NUMBER DATE COUNTRY Yes AF5 No Yes AG5 No Yes AH5 No OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.) Agazzi, O. et al., 10 Gb/s PMD Using PAM-5 Trellis Coded Modulation, IEEE 802.3, Alburquerque, AI5 March 6-10, 2000, 38 pages. Bhatt, V., Equalization Ad Hoc Concluding Report, IEEE P802.3ae Plenary, March 2001, 12 pages. AJ5 Bingham, J.A.C., "Multicarrier Modulation for Data Transmission: An Idea Whose Time Has Come," AK5 IEEE Communications Magazine, IEEE, Vol. 28, No. 5, pages 5-8 and 11-14. Chiddix, J. et al., "AM Video on Fiber in CATV Systems: Need and Implementation," IEEE Journal AL5 on Selected Areas in Communications, IEEE, Vol. 8, No. 7, September 1990, pages 1229-1239. Darcie, T., "Subcarrier Multiplexing for Lightwave Networks and Video Distribution Systems," IEEE Journal on Selected Areas in Communications, IEEE, Vol. 8, No. 7, September 1990, pages 1240-AM5 1248. Fettweis, G., "High-Rate Viterbi Processor: A Systolic Array Solution," IEEE Journal on Selected AN5 Areas in Communications, IEEE, Vol. 8, No. 8, October 1990, pages 1520-1534. **EXAMINER** DATE CONSIDERED **EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance

ATTY. DOCKET NO. 1875.0560003 INVENTORS BUCHWALD et al. APPLICATION NO. 09/844,283

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Page 7 of 10 ATTY, DOCKET NO. APPLICATION NO. **FORM PTO-1449** 1875.0560003 09/844,283 **INVENTORS** SECOND SUPPLEMENTAL BUCHWALD et al. INFORMATION DISCLOSURE STATEMENT **ART UNIT FILING DATE** 2634 April 30, 2001 U.S. PATENT DOCUMENTS **EXAMINER** CLASS | SUB-CLASS | FILING DATE INITIAL DOCUMENT NUMBER DATE NAME AA7 AB7 AC7 AD7 AE7 **FOREIGN PATENT DOCUMENTS EXAMINER** CLASS SUB-CLASS **TRANSLATION** DOCUMENT NUMBER DATE COUNTRY INITIAL AF7 No Yes AG7 No Yes AH7 No OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.) Kanno, N. and Ito, K., "Fiber-Optic Subcarrier Multiplexing Video Transport Employing Multilevel QAM," IEEE Journal on Selected Areas in Communications, IEEE, Vol. 8, No. 7, September 1990, AI7 pages 1313-1319. Kasper, B.L., "Equalization of Multimode Optical Fiber Systems," The Bell System Technical Journal, American Telephone and Telegraph Company, Vol. 61, No. 7, September 1982, pages AJ7 1367-1388. Kasturia, S. and Winters, J., "Techniques for High-Speed Implementation of Nonlinear Cancellation," IEEE Journal on Selected Areas in Communications, IEEE, Vol. 9, No. 5, June 1991, AK7 pages 711-717. Lenosky, T., A Unified Method of Calculating PMD-induced Pulse Broadening, IEEE 802.3ae AL7 Equalization Ad Hoc Meeting, Tampa, Florida, November 5, 2000, 8 pages. Lenosky, T. and Giaretta, G., Five Gb/s Multimode DMD at 850 nm: Real-Time Data and Equalizer AM7 Simulations, Finisar Corporation, March 11, 2001, 13 pages. Lenosky, T. et al., Measurements of DMD-Challenged Fibers at 850nm and 2Gb/s Data Rate, IEEE AN7 802.3ae - Equalization Ad Hoc Group, January 10, 2001, 21 pages. DATE CONSIDERED **EXAMINER**

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	AK8	Olshansky, R. et al., IEEE Journal on Sele 1268-1275.	"Subcarrier ected Areas	Multiplexed Coherent Lig in Communications, IEE	ghtwave System E, Vol. 8, No. 7,	s for Video I September	Distribution," 1990, pages	
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INFORMATION DISCLOSURE S April 30, 2001 2634 **U.S. PATENT DOCUMENTS EXAMINER** FILING DATE DOCUMENT NUMBER DATE CLASS SUB-CLASS INITIAL NAME **AA10 AB10** AC10 AD10 AE10 **FOREIGN PATENT DOCUMENTS** EXAMINER CLASS SUB-CLASS **TRANSLATION** DATE COUNTRY INITIAL DOCUMENT NUMBER Yes AF10 No Yes AG10 No Yes AH10 No OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.) Winters, J. et al., "Reducing the Effects of Transmission Impairments in Digital Fiber Optic AI10 Systems," IEEE Communications Magazine, IEEE, June 1993, pages 68-76. Progress Report on Equalization of Multimode Fibers, IEEE 802.3ae Ad Hoc Group on AJ10 Equalization, January 12, 2001, 16 pages. Alderrou, D. et al., XAUI/XGXS Proposal, IEEE 802.3ae Task Force, May 23-25, 2000, 28 pages. AK10 Winters, J.H. and Gitlin, R., "Electrical Signal Processing Techniques in Long-Haul, Fiber-Optic Systems," IEEE International Conference on Communications, IEEE, Vol. 1, April 16-19, 1990, AL10 pages 0397-0403. **AM10 AN10** DATE CONSIDERED **EXAMINER**

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